WHAT IS CLAIMED IS:

1. A method of decoding a constellation transmitted on subchannels of OFDM symbols in a (2x2) WLAN system; the method comprising the steps of:

receiving a constellation of transmitted OFDM symbols;

decoding the OFDM symbol having the higher SNR among the received OFDM symbols;

estimating the probability that the correct OFDM symbol has been decoded;

decoding the next higher-SNR OFDM symbol via LMMSE processing if the probability of error exceeds a predetermined threshold; and

subtracting the contribution of decoded symbol from the received signal followed by decoding the next higher-SNR OFDM symbol via IMMSE processing if the probability of error does not exceed the predetermined threshold.

2. The method according to claim 1, wherein the constellation of transmitted OFDM symbols is selected from the group consisting of BPSK symbols, and QPSK symbols.

3. The method according to claim 1, wherein the step of decoding the OFDM symbol having the higher SNR among the received OFDM symbols comprises decoding via LMMSE signal processing.

4. The method according to claim 1, wherein the step of decoding the OFDM symbol having the lower SNR among the received OFDM symbols comprises decoding via maximal-ratio combining.

5. The method according to claim 1, wherein the step of estimating the probability that the correct OFDM symbol has been decoded comprises estimating a function metric selected from the group consisting of additive noise variance, propagation channel matrix, and MMSE interference noise power.

6. The method according to claim 1, wherein the step of decoding the next OFDM symbol via LMMSE processing if the probability of error exceeds a predetermined threshold comprises estimating whether $P_{e1\bar{s}} = \frac{e^{-|\bar{s}|/\sigma^2}}{e^{-|\bar{s}|/\sigma^2} + e^{\bar{s}/\sigma^2}}$ is greater than a predetermined threshold, wherein σ^2 is the MMSE interference noise power of the first-stage symbol, and further wherein $\bar{s}$ represents the first-stage detected symbols prior to hard slicing.

7. The method according to claim 1, wherein the step of decoding the next OFDM symbol via IMMSE processing if the probability of error does not exceed the predetermined threshold comprises estimating whether $P_{e1\bar{s}} = \frac{e^{-|\bar{s}|/\sigma^2}}{e^{-|\bar{s}|/\sigma^2} + e^{\bar{s}/\sigma^2}}$ is not greater than a predetermined threshold, wherein σ^2 is the MMSE interference noise power of the first-stage symbol, and further wherein $\bar{s}$ represents the first-stage detected symbols prior to hard slicing.

8. A hybrid IMMSE-LMMSE receiver comprising:

an interference cancellation first stage operational to receive a constellation of transmitted OFDM symbols and decode the OFDM symbol having the higher SNR among the received OFDM symbols;

algorithmic software to estimate the probability that the correct OFDM symbol has been decoded;

an LMMSE processing stage operational to decode the next OFDM symbol via LMMSE processing if the probability of error exceeds a predetermined threshold; and

an IMMSE processing stage operational to decode the next OFDM symbol via IMMSE processing if the probability of error does not exceed the predetermined threshold.

9. The hybrid IMMSE-LMMSE receiver according to claim 8, wherein the algorithmic software to estimate the probability that the correct OFDM symbol has been decoded is configured to estimate a function metric selected from the group consisting of additive noise variance, propagation channel matrix, and MMSE interference noise power.

10. The hybrid IMMSE-LMMSE receiver according to claim 8, wherein the algorithmic software to estimate the probability that the correct OFDM symbol has been decoded is configured to estimate whether a metric defined by $P_{e1\bar{s}} = \frac{e^{-|\bar{s}|/\sigma^2}}{e^{-|\bar{s}|/\sigma^2} + e^{\bar{s}/\sigma^2}}$ is greater than a predetermined threshold, wherein σ^2 is the MMSE interference noise power of the first-stage symbol, and further wherein $\bar{s}$ represents the first-stage detected symbols prior to hard slicing.

11. The hybrid IMMSE-LMMSE receiver according to claim 8, wherein the algorithmic software to estimate the probability that the correct OFDM symbol has been decoded is configured to estimate whether a metric defined by $P_{e1\bar{s}} = \frac{e^{-|\bar{s}|/\sigma^2}}{e^{-|\bar{s}|/\sigma^2} + e^{\bar{s}/\sigma^2}}$ is not greater than a predetermined threshold, wherein σ^2 is the MMSE interference noise power of the first-stage symbol, and further wherein $\bar{s}$ represents the first-stage detected symbols prior to hard slicing.